

ABSTRACT

5 A magnetic sensor is disclosed in which a ferromagnetic runner (e.g.,
a permalloy runner) can be located relative to a target. A coil structure is
generally wound about the ferromagnetic runner, such that when a magnetic
field changes direction along an axial length of the ferromagnetic runner, a
voltage is induced in the coil structure that is proportional to a time range of
change of a magnetic flux density, due to the sudden internal magnetization
10 reversal of the runner. Additionally, an interfacing circuit can be provided in
which the ferromagnetic runner and the coil structure are integrated with the
interfacing circuit to thereby produce a magnetic sensor for magnetically
sensing the target. The magnetic sensor is highly sensitive and can operate
without electrical current or upon a negligible electrical current.